

CLAIMS

1. An apparatus for regulating a driver driving a gas compressor having a gas inlet and a gas outlet, wherein the driver has a maximum power, which apparatus comprises:
  - a recycle pressure relief device in fluid communication with the gas outlet,
  - 5 the recycle pressure relief device adapted to receive a stream of a compressed gas having a discharge pressure from the gas outlet; and
  - a conduit in fluid communication with the gas inlet, whereby the gas inlet receives at least a portion of the stream of the compressed gas transmitted to the conduit from the recycle pressure relief device when the discharge pressure reaches a designated pressure.
- 10
2. An apparatus as in claim 1, wherein the driver is a gas turbine and at least a portion of the compressed gas is a refrigerant.
- 15 3. An apparatus as in claim 1, wherein the driver is a single-shaft gas turbine and the compressor is a refrigerant compressor.
4. An apparatus as in claim 1, wherein the recycle pressure relief device is a valve.
- 20 5. An apparatus as in claim 1, further comprising a vessel in fluid communication with the conduit and the gas inlet.
6. An apparatus as in claim 1, further comprising at least one additional recycle pressure relief device in fluid communication with the gas outlet, the additional recycle pressure relief device adapted to receive an additional stream of the compressed gas from the gas outlet.
- 25
7. An apparatus as in claim 6, wherein the at least a portion of the stream of the compressed gas is transmitted to the conduit from the recycle pressure relief device when the driver reaches a first designated percentage of the maximum power, and at least a portion of the additional stream of the compressed gas is transmitted to the conduit from the additional recycle pressure relief device when the driver reaches a second designated percentage of the maximum power.
- 30

8. An apparatus for regulating at least one driver driving at least one multi-stage gas compressor having a plurality of stages, a gas inlet for each stage, and a gas outlet for each stage, which apparatus comprises:

5                   at least one recycle pressure relief device in fluid communication with each gas outlet, the recycle pressure relief device adapted to receive at least one stream of a compressed gas having a discharge pressure from the gas outlet; and

10                  at least one conduit in fluid communication with at least one gas inlet, whereby the at least one gas inlet receives at least a portion of the at least one stream of the compressed gas transmitted to the at least one conduit from the recycle pressure relief device when the discharge pressure reaches a designated pressure.

15                  9. An apparatus as in claim 8, wherein the driver is a single-shaft gas turbine and the compressor is a refrigerant compressor.

10. An apparatus as in claim 8, further comprising at least one vessel in fluid communication with the at least one conduit and at least one gas inlet.

20                  11. A baseload LNG plant using an apparatus as in claim 1.

12. An apparatus for regulating a single-shaft gas turbine driving a refrigerant compressor having a gas inlet and a gas outlet, the gas inlet optionally being in fluid communication with at least one vessel, which apparatus comprises:

25                  at least one recycle pressure relief valve in fluid communication with the gas outlet of the refrigerant compressor, each recycle pressure relief valve adapted to receive a separate stream of a compressed gas having a discharge pressure from the gas outlet of the refrigerant compressor; and

30                  at least one conduit in fluid communication with the gas inlet and optionally with the at least one vessel, whereby the gas inlet and optionally each vessel receives at least a portion of the stream of the compressed gas transmitted to the at least one conduit from the recycle pressure relief valve when the discharge pressure reaches a designated pressure.

13. A method for regulating a driver driving a gas compressor having a gas inlet and a gas outlet, the driver having a maximum power, which method comprises:

5 providing a recycle pressure relief device in fluid communication with the gas outlet, the recycle pressure relief device adapted to receive a stream of a compressed gas having a discharge pressure from the gas outlet;

establishing a designated pressure for the discharge pressure;

providing a conduit in fluid communication with the gas inlet; and

transmitting at least a portion of the stream of the compressed gas to the conduit from the recycle pressure relief device when the discharge pressure reaches the designated pressure.

10

14. A method as in claim 13, wherein the driver is a gas turbine and at least a portion of the compressed gas is a refrigerant.

15 15. A method as in claim 13, wherein the driver is a single-shaft gas turbine and the compressor is a refrigerant compressor.

16. A method as in claim 13, wherein the recycle pressure relief device is a valve.

20 17. A method as in claim 13 further comprising:

providing a vessel in fluid communication with the conduit and the gas inlet; and

transmitting at least a portion of the stream of the compressed gas from the conduit to the vessel.

25

18. A method as in claim 13 further comprising:

providing at least one additional recycle pressure relief device in fluid communication with the gas outlet, the additional recycle pressure relief device adapted to receive an additional stream of the compressed gas from the gas outlet; and

transmitting at least a portion of the additional stream of the compressed gas to the conduit when the discharge pressure reaches the designated pressure.

19. A method as in claim 18, wherein the at least a portion of the stream of the compressed gas is transmitted to the conduit from the recycle pressure relief device when the driver reaches a first designated percentage of the maximum power, and at least a portion of the additional stream of the compressed gas is transmitted to the conduit from the additional recycle pressure relief device when the driver reaches a second designated percentage of the maximum power.  
5
20. A method for regulating at least one driver driving at least one multi-stage gas compressor having a plurality of stages, a gas inlet for each stage, and a gas outlet for each stage, which method comprises:
  - providing at least one recycle pressure relief device in fluid communication with each gas outlet, the recycle pressure relief device adapted to receive at least one stream of a compressed gas having a discharge pressure from the gas outlet;
  - 15 establishing a designated pressure for the discharge pressure;
  - providing at least one conduit in fluid communication with at least one gas inlet; and
  - transmitting at least a portion of the at least one stream of the compressed gas to the at least one conduit from the recycle pressure relief device when the discharge pressure reaches the designated pressure, whereby the at least one gas inlet receives at least part of the at least a portion of the at least one stream of the compressed gas.
  - 20
21. A method as in claim 20, wherein the driver is a single-shaft gas turbine and the compressor is a refrigerant compressor.  
25
22. A method as in claim 20 further comprising:
  - providing a vessel in fluid communication with the at least one conduit and the gas inlet; and
  - 30 transmitting at least a portion of the at least a portion of the stream of the compressed gas from the at least one conduit to the vessel.
23. A process for producing liquefied natural gas from a baseload LNG plant using a method as in claim 13.

24. A method for regulating a single-shaft gas turbine driving a refrigerant compressor having a gas inlet and a gas outlet, the gas inlet optionally being in fluid communication with at least one vessel, which method comprises:

- 5        providing at least one recycle pressure relief valve in fluid communication with the gas outlet of the refrigerant compressor, each recycle pressure relief valve adapted to receive a separate stream of a compressed gas having a discharge pressure from the gas outlet of the refrigerant compressor;
- 10      establishing a designated pressure for the discharge pressure;
- 10      providing at least one conduit in fluid communication with the gas inlet and optionally with the at least one vessel; and
- 15      transmitting at least a portion of the stream of the compressed gas to the conduit from the recycle pressure relief valve when the discharge pressure reaches the designated pressure, whereby the gas inlet and optionally each vessel receives at least a portion of the stream of the compressed gas transmitted to the at least one conduit from the recycle pressure relief valve when the discharge pressure reaches the designated pressure.